# CHAPTER 19: NOISE

## A. INTRODUCTION

Noise pollution in an urban area comes from many sources. Some sources are activities essential to the health, safety, and welfare of the City's inhabitants, such as noise from emergency vehicle sirens, garbage collection operations, and construction and maintenance equipment. Other sources, such as traffic, stem from the movement of people and goods, activities that are essential to the viability of the City as a place to live and do business. Although these and other noise-producing activities are necessary to a city, the noise they produce is undesirable. Urban noise detracts from the quality of the living environment and there is increasing evidence that excessive noise represents a threat to public health.

The proposed rezoning would facilitate the development of sites with residential and commercial use. The noise analysis presented below focused on two potential sources of noise impacts: 1) locations where there is the potential for significant increases in noise due to traffic increases from the proposed action; and 2) forecast of ambient noise levels in order to determine if interior noise levels of future residential/commercial developments under the proposed action could exceed CEQR standards at development sites within the area to be rezoned to residential or mixed use.

In addition, these analyses consider the two build out scenarios under the proposed action. Scenario A is an impact assessment without the proposed TransGas project, and Scenario B is an impact assessment with the proposed TransGas project.

### Noise Fundamentals

Quantitative information on the effects of airborne noise on people is well documented. If sufficiently loud, noise may adversely affect people in several ways. For example, noise may interfere with human activities, such as sleep, speech communication, and tasks requiring concentration or coordination. It may also cause annoyance, hearing damage, and other physiological problems. Although it is possible to study these effects on people on an average or statistical basis, it must be remembered that all the stated effects of noise on people vary greatly with the individual. Several noise scales and rating methods are used to quantify the effects of noise on people. These scales and methods consider such factors as loudness, duration, time of occurrence, and changes in noise level with time.

#### *"A"-Weighted Sound Level (dBA)*

Noise is typically measured in units called decibels (dB), which are ten times the logarithm of the ratio of the sound pressure squared to a standard reference pressure squared. Because loudness is important in the assessment of the effects of noise on people, the dependence of loudness on frequency must be taken into account in the noise scale used in environmental assessments. Frequency is the rate at which sound pressures fluctuate in a cycle over a given quantity of time, and is measured in Hertz (Hz), where 1 Hz equals 1 cycle per second. Frequency defines sound in terms of pitch components. In the measurement system, one of the simplified scales that accounts for the dependence of perceived loudness on frequency is the use of a weighting network—known as A-weighting—that simulate the response of the human ear. For most noise assessments, the A-weighted sound pressure level in units of dBA is used in view of its widespread recognition and its close correlation with perception. In this analysis, all measured noise levels are reported in dBA or A-weighted decibels. Common noise levels in dBA are shown in Table 19-1.

**TABLE 19-1**
**Common Noise Levels**

| Sound Source | (dBA) |
|---|---|
| Military jet, air raid siren | 130 |
| Amplified rock music | 110 |
| Jet takeoff at 500 meters | 100 |
| Freight train at 30 meters | 95 |
| Train horn at 30 meters | 90 |
| Heavy truck at 15 meters | |
| Busy city street, loud shout | 80 |
| Busy traffic intersection | |
| Highway traffic at 15 meters, train | 70 |
| Predominantly industrial area | 60 |
| Light car traffic at 15 meters, city or commercial areas or residential areas close to industry | |
| Background noise in an office | 50 |
| Suburban areas with medium density transportation | |
| Public library | 40 |
| Soft whisper at 5 meters | 30 |
| Threshold of hearing | 0 |

**Note:** A 10 dBA increase in level appears to double the loudness, and a 10 dBA decrease halves the apparent loudness.
**Source:** Cowan, James P. Handbook of Environmental Acoustics. Van Nostrand Reinhold, New York, 1994. Egan, M. David, Architectural Acoustics. McGraw-Hill Book Company, 1988.

### *Community Response to Changes in Noise Levels*

The average ability of an individual to perceive changes in noise levels is well documented (see Table 19-2). Generally, changes in noise levels less than 3 dBA are barely perceptible to most listeners, whereas 10 dBA changes are normally perceived as doublings (or halvings) of noise levels. These guidelines permit direct estimation of an individual's probable perception of changes in noise levels.

**TABLE 19-2**
**Average Ability to Perceive Changes in Noise Levels**

| Change (dBA) | Human Perception of Sound |
|---|---|
| 2-3 | Barely perceptible |
| 5 | Readily noticeable |
| 10 | A doubling or halving of the loudness of sound |
| 20 | A "dramatic change" |
| 40 | Difference between a faintly audible sound and a very loud sound |

**Source:** Bolt Beranek and Neuman, Inc., *Fundamentals and Abatement of Highway Traffic Noise*, Report No. PB-222-703. Prepared for Federal Highway Administration, June 1973.

It is also possible to characterize the effects of noise on people by studying the aggregate response of people in communities. The rating method used for this purpose is based on a statistical analysis of the fluctuations in noise levels in a community, and integrates the fluctuating sound energy over a known period of time, most typically during 1 hour or 24 hours. Various government and research institutions have proposed criteria that attempt to relate changes in noise levels to community response. One commonly applied criterion for estimating this response is incorporated into the community response scale proposed by the International Standards Organization (ISO) of the United Nations (see Table 19-3). This scale relates changes in noise level to the degree of community response and permits direct estimation of the probable response of a community to a predicted change in noise level.

**TABLE 19-3**
**Community Response to Increases in Noise Levels**

| Change (dBA) | Category | Description |
|---|---|---|
| 0 | None | No observed reaction |
| 5 | Little | Sporadic complaints |
| 10 | Medium | Widespread complaints |
| 15 | Strong | Threats of community action |
| 20 | Very strong | Vigorous community action |

**Source:** International Standards Organization, *Noise Assessment with Respect to Community Responses*, ISO/TC 43. (New York: United Nations, November 1969).

***Noise Descriptors Used in Impact Assessment***

Because the sound pressure level unit of dBA describes a noise level at just one moment and very few sources of noise are constant, other ways of describing noise over extended periods have been developed. One way of describing fluctuating sound is to describe the fluctuating noise heard over a specific time period as if it had been a steady, unchanging sound. For this condition, a descriptor called the "equivalent sound level," $L_{eq}$, can be computed. $L_{eq}$ is the constant sound level that, in a given situation and time period (e.g., 1 hour, denoted by $L_{eq(1)}$, or 24 hours, denoted as $L_{eq(24)}$), conveys the same sound energy as the actual time-varying sound. Statistical sound level descriptors such as $L_1$, $L_{10}$, $L_{50}$, $L_{90}$, are sometimes used to indicate noise levels that are exceeded 1, 10, 50, 90 percent of the time, respectively. $L_{eq}$ is used in the prediction of future noise levels, by adding the contributions from new sources of noise (i.e., increases in traffic volumes) to the existing levels and in relating annoyance to increases in noise levels.

The relationship between $L_{eq}$ and levels of exceedance is worth noting. Because $L_{eq}$ is defined in energy rather than straight numerical terms, it is not simply related to the levels of exceedance. If the noise fluctuates very little, $L_{eq}$ will approximate $L_{50}$ or the median level. If the noise fluctuates broadly, the $L_{eq}$ will be approximately equal to the $L_{10}$ value. If extreme fluctuations are present, the $L_{eq}$ will exceed $L_{90}$ or the background level by 10 or more decibels. Thus the relationship between $L_{eq}$ and the levels of exceedance will depend on the character of the noise. In community noise measurements, it has been observed that the $L_{eq}$ is generally between $L_{10}$ and $L_{50}$. The relationship between $L_{eq}$ and exceedance levels has been used in this analysis to characterize the noise sources and to determine the nature and extent of their impact at all receptor locations for most receptor locations.

For the purposes of this project, the maximum 1-hour equivalent sound level ($L_{eq(1)}$) has been selected as the noise descriptor to be used in the noise impact evaluation. $L_{eq(1)}$ is the noise descriptor used in the *New York City Environmental Quality Review (CEQR) Technical Manual* for noise impact evaluation, and is used to provide an indication of highest expected sound levels. $L_{10(1)}$ is the noise descriptor used in the *CEQR Technical Manual* for building attenuation. Hourly statistical noise levels (particularly $L_{10}$ and $L_{eq}$

levels) were used to characterize the relevant noise sources and their relative importance at each receptor location because traffic is the main source of noise for most receptor locations.

## B. NOISE STANDARDS AND CRITERIA

### New York City Noise Code

The New York City Noise Control Code promulgates sound-level standards for motor vehicles, air compressors, and paving breakers, requires that all exhausts be muffled, and prohibits all unnecessary noise adjacent to schools, hospitals, or courts. The code further limits construction activities to weekdays between 7 AM and 6 PM.

This Code contains ambient noise quality criteria and standards based on existing land use zoning designations. Table 19-4 summarizes the ambient noise quality criteria contained in the Noise Code. Conformance with the noise level values contained in the Code is determined by considering noise emitted directly from stationary activities within the boundaries of a project. Construction activities and noise sources outside the boundaries of a project are not included within the provisions of this law.

**TABLE 19-4**
**City of New York**
**Ambient Noise Quality Zone Criteria (in dBA)**

| Ambient Noise Quality Zone (ANQZ) | Daytime Standards* (7 AM-10 PM) | Nighttime Standards* (10 PM-7 AM) |
|---|---|---|
| Low-Density Residential (R1 to R3) Land Uses (N1) | 60 | 50 |
| High-Density Residential (R4 to R10) Land Uses (N2) | 65 | 55 |
| Commercial (C1 to C8) and Manufacturing (M1 to M3) Land Uses (N3) | 70 | 70 |

**Note:** * $L_{eq(1\ hour)}$.
**Source:** City of New York Local Law No. 64.

*New York City CEQR Noise Standards*

The New York City Department of Environmental Protection (NYCDEP) has set external noise exposure standards to be used in city projects. These standards are shown in Tables 19-5 and 19-6. Noise Exposure is classified into four categories: acceptable, marginally acceptable, marginally unacceptable, and clearly unacceptable. The standards shown are based on maintaining an interior noise level for the worst-case hour $L_{10}$ less than or equal to 45 dBA. Attenuation requirements are shown in Table 19-6.

In addition, the *CEQR Technical Manual* uses the following criteria to determine whether a proposed project would result in a significant adverse noise impact. The impact assessment compares $L_{eq(1)}$ noise levels with the proposed action (future With-Action) to those calculated for the future without the proposed action (future No-Action) at nearby receptors.

**TABLE 19-5**
**Noise Exposure Guidelines**
**For Use in City Environmental Impact Review**[1]

| Receptor Type | Time Period | Acceptable General External Exposure | Airport[3] Exposure | Marginally Acceptable General External Exposure | Airport[3] Exposure | Marginally Unacceptable General External Exposure | Airport[3] Exposure | Clearly Unacceptable General External Exposure | Airport[3] Exposure |
|---|---|---|---|---|---|---|---|---|---|
| 1. Outdoor area requiring serenity and quiet[2] | | $L_{10} \le 55$ dBA | ---------- $Ldn \le 60$ dBA ---------- | | | | | | |
| 2. Hospital, Nursing Home | | $L_{10} \le 55$ dBA | | $55 < L_{10} \le 65$ dBA | ---------- $60 < Ldn \le 65$ dBA ---------- | $65 < L_{10} \le 80$ dBA | (I) $65 < Ldn \le 70$ dBA, (II) $70 \le Ldn$ | $L_{10} > 80$ dBA | ---------- $Ldn \le 75$ dBA ---------- |
| 3. Residence, residential hotel or motel | 7 AM to 10 PM | $L_{10} \le 65$ dBA | | $65 < L_{10} \le 70$ dBA | | $70 < L_{10} \le 80$ dBA | | $L_{10} > 80$ dBA | |
| | 10 PM to 7 AM | $L_{10} \le 55$ dBA | | $55 < L_{10} \le 70$ dBA | | $70 < L_{10} \le 80$ dBA | | $L_{10} > 80$ dBA | |
| 4. School, museum, library, court, house of worship, transient hotel or motel, public meeting room, auditorium, out-patient public health facility | | Same as Residential Day (7 AM-10 PM) | | Same as Residential Day (7 AM-10 PM) | | Same as Residential Day (7 AM-10 PM) | | Same as Residential Day (7 AM-10 PM) | |
| 5. Commercial or office | | Same as Residential Day (7 AM-10 PM) | | Same as Residential Day (7 AM-10 PM) | | Same as Residential Day (7 AM-10 PM) | | Same as Residential Day (7 AM-10 PM) | |
| 6. Industrial, public areas only[4] | Note 4 | Note 4 | | Note 4 | | Note 4 | | Note 4 | |

**Notes:**
(i) In addition, any new activity shall not increase the ambient noise level by 3 dBA or more;
[1] Measurements and projections of noise exposures are to be made at appropriate heights above site boundaries as given by American National Standards Institute (ANSI) Standards; all values are for the worst hour in the time period.
[2] Tracts of land where serenity and quiet are extraordinarily important and serve an important public need and where the preservation of these qualities is essential for the area to serve its intended purpose. Such areas could include amphitheaters, particular parks or portions of parks or open spaces dedicated or recognized by appropriate local officials for activities requiring special qualities of serenity and quiet. Examples are grounds for ambulatory hospital patients and patients and residents of sanitariums and old-age homes.
[3] One may use the FAA-approved $L_{dn}$ contours supplied by the Port Authority, or the noise contours may be computed from the federally approved INM Computer Model using flight data supplied by the Port Authority of New York and New Jersey.
[4] External Noise Exposure standards for industrial areas of sounds produced by industrial operations other than operating motor vehicles or other transportation facilities are spelled out in the New York City Zoning Resolution, Sections 42-20 and 42-21. The referenced standards apply to M1, M2, and M3 manufacturing districts and to adjoining residence districts (performance standards are octave band standards).
**Source:** New York City Department of Environmental Protection (adopted policy 1983).

**TABLE 19-6**
**Required Attenuation Values to Achieve Acceptable Interior Noise Levels**

| | Marginally Acceptable | Marginally Unacceptable | | Clearly Unacceptable | | |
|---|---|---|---|---|---|---|
| Noise level with proposed action | $65<L_{10}\le70$ | $70<L_{10}\le75$ | $75<L_{10}\le80$ | $80<L_{10}\le85$ | $85<L_{10}\le90$ | $90<L_{10}\le95$ |
| Attenuation | 25 dB(A) | (i) 30dB(A) | (II) 35 dB(A) | (i) 40 dB(A) | (II) 45 dB(A) | (III) 50 dB(A) |

**Source:** New York City Department of Environmental Protection

If the No-Action noise levels are less than 60 dBA $L_{eq(1)}$ and the analysis period is not a nighttime period, the threshold for a significant impact would be an increase of at least 5 dBA $L_{eq(1)}$. For the 5 dBA threshold to be valid, the resultant proposed action noise level would have to be equal to or less than 65 dBA. If the future No-Action noise level is equal to or greater than 62 dBA $L_{eq(1)}$, or if the analysis period is a nighttime period (defined in the CEQR standards as being between 10 PM and 7 AM), the incremental significant impact threshold would be 3 dBA $L_{eq(1)}$. If the future No-Action noise level is 61 dBA $L_{eq(1)}$, the maximum incremental increase would be 4 dBA, since an increase higher than this would result in a noise level higher than the 65 dBA $L_{eq(1)}$ threshold.

***Performance Standards for Manufacturing Districts***

Section 42-213 of the New York City Zoning Resolution (ZR) contains noise performance standards for uses in manufacturing districts. Noise levels from any activity, whether open or enclosed, cannot exceed the sound pressure levels shown in Table 19-7, on or beyond the lot line.

**TABLE 19-7**
**City of New York Noise Performance Standards for Manufacturing Districts**
**Maximum Permitted Sound Pressure Levels (in dB)**

| Octave Band (Hz) | M1 District | M2 District | M3 District |
|---|---|---|---|
| 20 to 75 | 79 | 79 | 80 |
| 75 to 150 | 74 | 75 | 75 |
| 150 to 300 | 66 | 68 | 70 |
| 300 to 600 | 59 | 62 | 64 |
| 600 to 1200 | 53 | 56 | 58 |
| 1200 to 2400 | 47 | 51 | 53 |
| 2400 to 4800 | 41 | 47 | 49 |
| Above 4800 | 39 | 44 | 46 |

**Source:** New York City Zoning Resolution Performance Standards for Manufacturing Districts

Operation of motor vehicles or other transportation facilities are not included in the maximum levels specified in the performance standards. When a manufacturing district adjoins a residential district, the maximum permitted levels within the residential district shall be reduced by 6 decibels from the maximum levels set forth in the above table. A large portion of the study area for this project would be rezoned to mixed use (MX) districts as part of the proposed action. The proposed rezoning would not introduce any new manufacturing uses into the area.

## C. NOISE PREDICTION METHODOLOGY

### Proportional Modeling Analysis

A proportional modeling analysis was used as a screening mechanism to determine whether specific locations had the potential for significant noise impacts. The proportional model is one of the methodologies recommended in the *CEQR Technical Manual* for mobile source noise analysis.

Using this analysis (equation), the forecast of future traffic noise levels is based on existing noise levels and predicted changes in traffic volumes to determine future No-Action and With-Action levels. Future

No-Action traffic volumes were based on applying a growth factor (1% growth/year) to the existing traffic volumes. Future With-Action traffic volumes were obtained by adding project-generated traffic values to No-Action condition. The vehicular traffic volumes were converted into Passenger Car Equivalent (PCE) values cars based on the *CEQR Technical Manual*, for which one medium truck (having a gross weight between 9,900 and 26,400 pounds) is assumed to generate the noise equivalent of 13 cars, one heavy truck (having a gross weight of more than 26,400 pounds) is assumed to generate the noise equivalent of 47 cars, and one bus (vehicles designed to carry more than nine passengers) is assumed to generate the noise equivalent of 18 cars. Future noise levels are calculated using the following equation:

F NL = 10 * log (F PCE / E PCE) + E NL

where:

F NL = Future Noise Level

E NL = Existing Noise Level

F PCE = Future PCEs

E PCE = Existing PCEs

Sound levels are measured in decibels and therefore increase logarithmically with sound source strength. In this case, the sound source is traffic volumes measured in PCEs. For example, assuming that traffic is the dominant noise source at a particular location, if the existing traffic volume on a street is 100 PCE and if the future traffic volume were increased by 50 PCE to a total of 150 PCE, the noise level would increase by 1.8 dBA. Similarly, if the future traffic were increased by 100 PCE, or doubled to a total of 200 PCE, the noise level would increase by 3.0 dBA.

This procedure was used to identify the potential for significant noise impacts. The analysis examined weekday AM, midday (MD), and PM peak hour traffic values. These time periods are the hours when the proposed action has its maximum traffic generation and, therefore, the hours when the future With-Action noise levels are most likely to have a significant impact (i.e., an increase of 3.0 dBA or greater per CEQR criteria).

## D. EXISTING CONDITIONS

### Study Area Description

The area of the proposed rezoning is described in Chapter 1, “Project Description”. Currently, this area has a moderate level of traffic with light and heavy manufacturing uses, in addition to residential and other noise sensitive uses, such as parks. Current zoning districts are a combination of M3-1 along the waterfront, with M1-1 and M1-2 inland with a transition into the R6 and C4/C8 zoning that are found in the Greenpoint-Williamsburg residential communities. Under the proposed rezoning there would be new mixed use (MX) zoning in what is currently zoned M1, which would allow a mix of residential and manufacturing. On the waterfront, the zoning districts would be changed from manufacturing to R6 and R8. There would also be a light industrial core area that would remain as an M1 zone.

## Selection of Noise Monitoring Locations

Based on field investigations and a review of existing volumes and projected (With-Action) traffic volumes, 15 locations (Sites 1 through 10, 26, 27, and 29 through 31) were identified as areas where project-generated traffic would have the potential to cause increases in noise levels or noise impacts. In addition, 20 receptor locations were also selected to identify noise sensitive receptor locations that have the greatest potential for being adversely affected by project-generated noise. The noise monitoring locations were selected nearby or adjacent to projected and potential development sites. At locations where development sites were clustered, a central noise monitoring location was determined to best reflect ambient noise levels (noise along corridors). In addition, locations in close proximity to heavy trafficked streets or bridges (e.g., Brooklyn-Queens Expressway, McGuinness Boulevard, Williamsburg Bridge) were also selected. There are also two sites that are located near the proposed park.

See Table 19-8 and Figure 19-1 for noise monitoring locations. These sites are representative of other locations in the immediate area, and the noise impact analysis receptor locations are the locations where maximum project impacts would be expected.

## Noise Monitoring

Noise monitoring at each location (Sites 1 through 35) was performed on May 11-13, 20, 25, 27, and June 1-2, 8, 9 and 10, 15-17, 22, 23, 2004. At each of these sites, 20-minute measurements were taken during the weekday AM (7:30 AM – 10:00 AM), midday (MD) (11:00 AM – 3:00 PM), and PM (4:30 PM – 6:30 PM) peak periods. These analysis periods also correspond with the traffic peak periods.

## Equipment Used During Noise Monitoring

The instrumentation used for the 20-minute noise measurements was a Brüel & Kjær Type 4176 ½-inch microphone connected to a Brüel & Kjær Model 2260 Type 1 (according to ANSI Standard S1.4-1983) sound level meter. This assembly was mounted at a height of 5 feet above the ground surface on a tripod and at least 6 feet away from any large sound-reflecting surface to avoid major interference with sound propagation. The meter was calibrated before and after readings with a Brüel & Kjær Type 4231 sound-level calibrator using the appropriate adaptor. Measurements at each location were made on the A-scale (dBA). The data were digitally recorded by the sound level meter and displayed at the end of the measurement period in units of dBA. Measured quantities included $L_{eq}$, $L_1$, $L_{10}$, $L_{50}$, $L_{90}$, $L_{max}$ and $L_{min}$ per CEQR guidelines. A windscreen was used during all sound measurements except for calibration. Only traffic related noise was measured; noise from other sources (e.g., emergency sirens, aircraft flyovers, etc.) was excluded from the measured noise levels. Weather conditions were noted to ensure a true reading as follows: wind speed under 12 mph; relative humidity under 90 percent; and temperature above 14$^{o}$F and below 122$^{o}$F. All measurement procedures conformed to the requirements of ANSI Standard S1.13-1971 (R1976).

## Results of Baseline Measurements

The measured existing noise levels at each receptor site are summarized in Table 19-8.

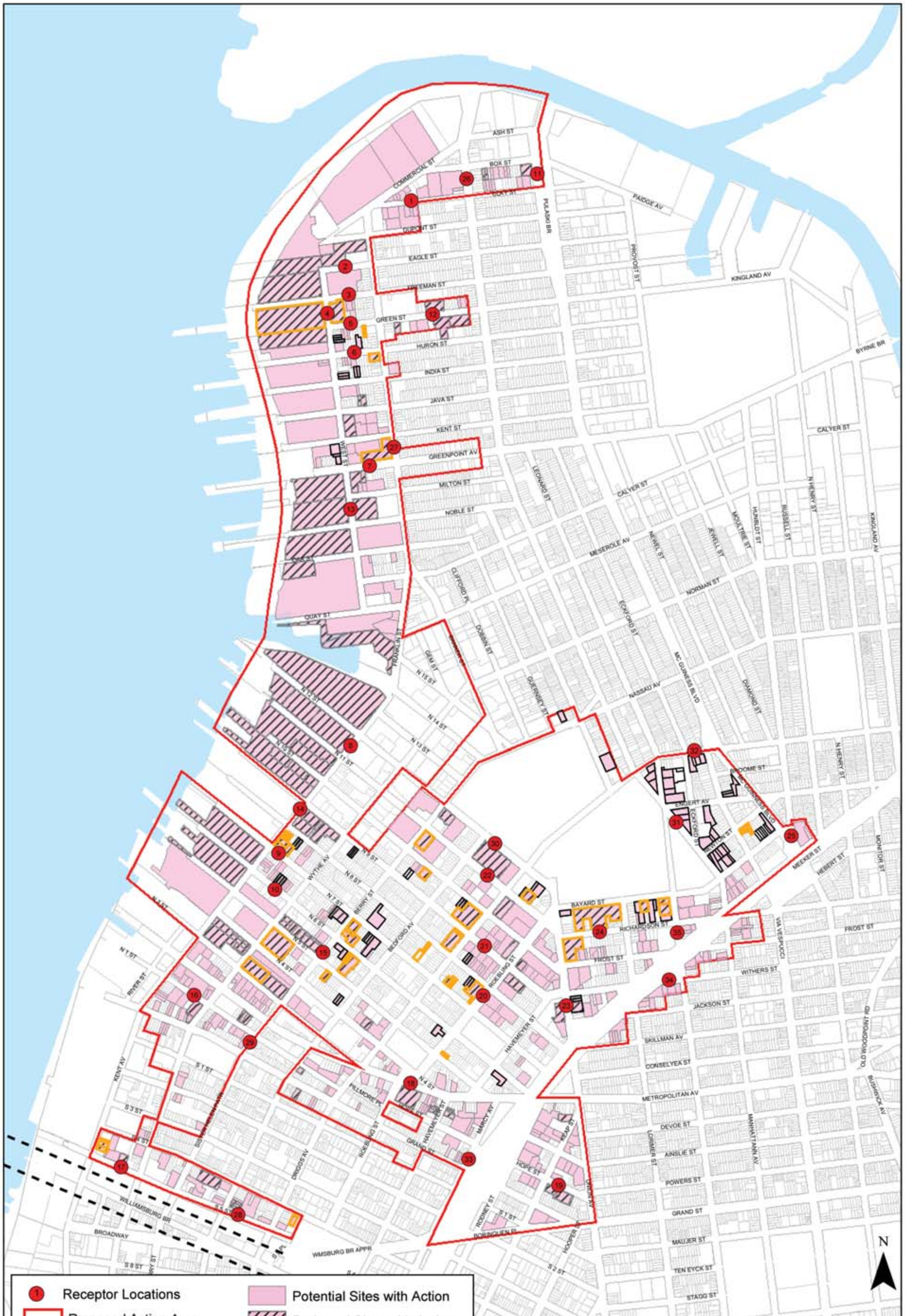




Figure 19-1
Noise Receptor Locations

**TABLE 19-8**
**Existing Noise Levels**
**(in dBA)**

| Site | Location | Time | $L_{eq}$ | $L_1$ | $L_{10}$ | $L_{50}$ | $L_{90}$ |
|---|---|---|---|---|---|---|---|
| 1 | Clay Street btw Franklin Street & Manhattan Avenue (traffic receptor) | AM | 63.7 | 76.4 | 62.8 | 57.2 | 54.8 |
| | | MD | 52.9 | 64.2 | 54.4 | 49.4 | 47.8 |
| | | PM | 59.7 | 71.0 | 59.0 | 53.6 | 51.6 |
| 2 | Eagle Street btw West Street & Franklin Street (traffic receptor) | AM | 65.7 | 81.6 | 66.0 | 62.0 | 55.6 |
| | | MD | 59.0 | 71.6 | 57.4 | 52.0 | 50.2 |
| | | PM | 59.4 | 70.6 | 60.0 | 55.2 | 53.8 |
| 3 | Freeman Street btw West Street & Franklin Street (traffic receptor) | AM | 69.3 | 78.0 | 72.2 | 62.8 | 58.0 |
| | | MD | 66.5 | 78.6 | 67.2 | 57.0 | 53.8 |
| | | PM | 63.4 | 73.6 | 65.4 | 59.6 | 55.4 |
| 4 | West Street btw Freeman Street & Green Street (traffic receptor) | AM | 60.1 | 68.8 | 62.0 | 58.4 | 53.0 |
| | | MD | 57.7 | 66.2 | 59.6 | 55.0 | 52.8 |
| | | PM | 61.4 | 72.4 | 64.4 | 56.8 | 51.2 |
| 5 | Green Street btw West & Franklin Street (traffic receptor) | AM | 62.6 | 73.4 | 61.0 | 55.0 | 52.0 |
| | | MD | 57.7 | 80.8 | 64.6 | 56.2 | 51.2 |
| | | PM | 62.4 | 74.6 | 63.2 | 54.4 | 51.8 |
| 6 | Huron Street btw West Street & Franklin Street (traffic receptor) | AM | 61.9 | 74.0 | 64.2 | 53.6 | 50.6 |
| | | MD | 59.3 | 69.2 | 62.2 | 55.8 | 50.8 |
| | | PM | 59.6 | 70.0 | 63.4 | 54.8 | 51.8 |
| 7 | Greenpoint Avenue btw West Street & Franklin Street (traffic receptor) | AM | 70.2 | 82.4 | 73.6 | 63.0 | 58.6 |
| | | MD | 66.8 | 79.4 | 68.4 | 60.6 | 56.2 |
| | | PM | 63.5 | 74.8 | 65.2 | 58.8 | 56.4 |
| 8 | Kent Avenue btw North 11th Street & North 12th Street (park receptor) | AM | 74.9 | 84.4 | 78.6 | 70.8 | 68.0 |
| | | MD | 71.4 | 84.8 | 77.8 | 69.2 | 61.2 |
| | | PM | 73.7 | 83.6 | 77.0 | 69.0 | 60.2 |
| 9 | North 7th Street btw Kent Avenue & Wythe Avenue (traffic receptor) | AM | 58.6 | 71.8 | 61.0 | 56.6 | 54.2 |
| | | MD | 60.3 | 69.4 | 62.4 | 56.4 | 55.2 |
| | | PM | 58.6 | 65.6 | 61.0 | 57.2 | 55.2 |
| 10 | North 6th Street btw Kent Avenue & Wythe Avenue (traffic receptor) | AM | 60.1 | 71.8 | 61.6 | 54.0 | 51.2 |
| | | MD | 60.3 | 69.4 | 62.4 | 56.4 | 54.2 |
| | | PM | 58.8 | 68.5 | 60.0 | 55.5 | 53.0 |
| 11 | McGuinness Blvd. btw Box Street & Clay Street (Residential Receptor) | AM | 67.9 | 78.0 | 68.6 | 65.0 | 62.2 |
| | | MD | 65.4 | 71.8 | 67.0 | 64.0 | 60.8 |
| | | PM | 67.9 | 76.4 | 69.4 | 66.2 | 63.4 |
| 12 | Green Street btw Franklin Street & Manhattan Avenue (Residential Receptor) | AM | 67.1 | 78.6 | 69.2 | 60.4 | 53.8 |
| | | MD | 66.0 | 79.0 | 67.4 | 55.2 | 49.6 |
| | | PM | 65.1 | 75.6 | 68.4 | 59.2 | 55.2 |
| 13 | West Street btw Noble Street & Milton Street (Residential Receptor) | AM | 63.8 | 65.8 | 59.6 | 54.0 | 51.2 |
| | | MD | 70.3 | 80.2 | 70.8 | 66.4 | 65.8 |
| | | PM | 68.4 | 78.5 | 72.0 | 65.0 | 62.0 |
| 14 | Kent Avenue btw North 8th Street & North 9th Street (park and residential receptor) | AM | 71.9 | 82.2 | 75.6 | 67.0 | 58.6 |
| | | MD | 76.2 | 86.8 | 78.6 | 72.2 | 68.0 |
| | | PM | 72.4 | 82.0 | 75.8 | 68.8 | 60.4 |

**TABLE 19-8 (continued)**
**Existing Noise Levels (in dBA)**

| Site | Location | Time | $L_{eq}$ | $L_1$ | $L_{10}$ | $L_{50}$ | $L_{90}$ |
|---|---|---|---|---|---|---|---|
| 15 | Berry Street btw North 5th Street & North 6th Street (Residential Receptor) | AM | 69.4 | 81.6 | 71.6 | 61.8 | 56.4 |
| | | MD | 67.0 | 78.6 | 68.8 | 58.8 | 55.0 |
| | | PM | 65.9 | 77.4 | 68.6 | 58.2 | 54.6 |
| 16 | North 1st Street btw Kent Avenue & Wythe Avenue (Residential Receptor) | AM | 58.8 | 66.6 | 61.8 | 56.4 | 52.4 |
| | | MD | 62.5 | 70.5 | 66.0 | 59.0 | 55.5 |
| | | PM | 60.3 | 71.0 | 59.6 | 54.4 | 51.8 |
| 17 | South 5th Street btw Kent Avenue & Wythe Avenue (Residential Receptor) | AM | 72.7 | 80.2 | 76.2 | 70.2 | 66.8 |
| | | MD | 72.6 | 79.4 | 75.8 | 70.8 | 68.0 |
| | | PM | 73.8 | 78.0 | 75.8 | 73.4 | 70.2 |
| 18 | Metropolitan Avenue btw Roebling Street & Havemeyer Street (Residential Receptor) | AM | 72.5 | 83.0 | 76.4 | 67.4 | 59.6 |
| | | MD | 70.9 | 80.5 | 74.5 | 66.5 | 59.5 |
| | | PM | 70.6 | 81.6 | 73.2 | 66.2 | 58.6 |
| 19 | Hope Street btw Keap Street & Hooper Street (Residential Receptor) | AM | 60.9 | 71.2 | 61.8 | 56.6 | 54.8 |
| | | MD | 63.5 | 75.6 | 62.8 | 55.6 | 53.0 |
| | | PM | 59.4 | 68.4 | 61.0 | 56.4 | 53.8 |
| 20 | Roebling Street btw North 7th Street & North 8the Street (Residential Receptor) | AM | 63.7 | 72.4 | 66.0 | 61.4 | 59.0 |
| | | MD | 64.8 | 75.0 | 68.0 | 60.5 | 55.5 |
| | | PM | 65.8 | 79.0 | 67.0 | 59.5 | 53.5 |
| 21 | North 9th Street btw Driggs Avenue & Roebling Street (Residential Receptor) | AM | 63.5 | 76.8 | 62.8 | 58.4 | 57.0 |
| | | MD | 62.7 | 73.0 | 64.5 | 57.0 | 54.5 |
| | | PM | 62.8 | 72.5 | 65.5 | 59.0 | 56.0 |
| 22 | North 11th Street btw Bedford Avenue & Driggs Avenue (Residential Receptor) | AM | 63.3 | 74.8 | 65.6 | 57.4 | 54.4 |
| | | MD | 58.6 | 69.0 | 60.5 | 54.5 | 51.5 |
| | | PM | 59.9 | 69.5 | 63.0 | 56.5 | 52.5 |
| 23 | Union Avenue btw BQE Expressway & Withers Street (Residential Receptor) | AM | 68.7 | 81.0 | 69.5 | 63.5 | 60.5 |
| | | MD | 68.5 | 79.6 | 69.4 | 62.8 | 60.2 |
| | | PM | 68.0 | 78.4 | 70.2 | 63.6 | 60.2 |
| 24 | Richardson Street btw Union Avenue & Lorimer Street (Residential Receptor) | AM | 64.5 | 75.5 | 67.5 | 57.5 | 54.5 |
| | | MD | 61.4 | 71.4 | 65.4 | 55.6 | 53.2 |
| | | PM | 59.8 | 69.4 | 62.8 | 55.8 | 54.0 |
| 25 | McGuinness Blvd btw Bayard Street & Meeker Street (Residential Receptor) | AM | 74.3 | 83.6 | 76.8 | 71.0 | 67.2 |
| | | MD | 74.7 | 86.2 | 76.0 | 71.0 | 68.4 |
| | | PM | 72.3 | 81.6 | 75.6 | 69.0 | 64.8 |
| 26 | Manhattan Avenue btw Box Street & Clay Street (traffic receptor) | AM | 67.9 | 79.0 | 70.6 | 63.8 | 58.8 |
| | | MD | 64.9 | 75.5 | 68.0 | 61.0 | 55.0 |
| | | PM | 64.0 | 63.5 | 55.5 | 58.0 | 54.0 |
| 27 | Franklin Street btw Kent Street & Greenpoint Avenue (traffic receptor) | AM | 67.0 | 76.6 | 69.8 | 63.8 | 58.0 |
| | | MD | 67.2 | 78.5 | 70.0 | 63.0 | 56.0 |
| | | PM | 67.2 | 76.0 | 70.4 | 63.4 | 57.4 |
| 28 | South 5th Street btw Bedford Avenue & Driggs Avenue (Residential Receptor) | AM | 70.9 | 80.0 | 73.8 | 67.8 | 66.0 |
| | | MD | 72.6 | 82.5 | 75.5 | 68.5 | 66.5 |
| | | PM | 73.1 | 81.5 | 76.5 | 69.5 | 67.5 |
| 29 | Berry Street btw Grand Street & North 1st Street (traffic receptor) | AM | 68.0 | 77.6 | 71.2 | 65.0 | 59.0 |
| | | MD | 68.6 | 80.5 | 71.5 | 62.5 | 58.5 |
| | | PM | 63.8 | 74.5 | 67.0 | 59.0 | 56.0 |

**TABLE 19-8 (continued)**
**Existing Noise Levels (in dBA)**

| Site | Location | Time | $L_{eq}$ | $L_1$ | $L_{10}$ | $L_{50}$ | $L_{90}$ |
|---|---|---|---|---|---|---|---|
| 30 | North 12th Street btw Bedford Avenue & Driggs Avenue (traffic receptor) | AM | 65.4 | 77.6 | 65.8 | 57.2 | 53.4 |
| | | MD | 60.6 | 71.0 | 63.5 | 56.5 | 52.5 |
| | | PM | 60.8 | 70.0 | 63.0 | 58.5 | 54.5 |
| 31 | Manhattan Avenue btw Eckford Street & Engert Avenue (traffic receptor) | AM | 63.0 | 73.0 | 65.6 | 57.2 | 55.4 |
| | | MD | 65.8 | 77.2 | 67.4 | 60.2 | 56.2 |
| | | PM | 63.0 | 71.8 | 66.2 | 59.4 | 57.0 |
| 32 | Driggs Avenue btw Eckford Street & Graham Avenue (Residential Receptor) | AM | 69.9 | 82.0 | 71.6 | 64.0 | 58.4 |
| | | MD | 68.4 | 80.0 | 70.0 | 63.2 | 58.2 |
| | | PM | 68.1 | 78.8 | 70.2 | 64.2 | 59.0 |
| 33 | Marcy Avenue btw Grand Street & Hope Street (Residential Receptor) | AM | 71.6 | 78.6 | 74.8 | 69.8 | 66.0 |
| | | MD | 70.7 | 81.5 | 72.5 | 68.0 | 65.5 |
| | | PM | 70.2 | 80.4 | 72.0 | 67.0 | 63.6 |
| 34 | Intersection of Withers Street & BQE (Residential Receptor) | AM | 73.7 | 78.0 | 75.4 | 73.2 | 71.0 |
| | | MD | 69.3 | 77.6 | 72.0 | 66.4 | 63.0 |
| | | PM | 67.6 | 75.4 | 70.6 | 65.2 | 61.0 |
| 35 | Leonard Street btw Richardson Street & BQE (Residential Receptor) | AM | 68.9 | 78.2 | 70.8 | 65.8 | 63.4 |
| | | MD | 69.1 | 76.6 | 71.2 | 67.6 | 65.6 |
| | | PM | 69.7 | 80.2 | 72.0 | 66.2 | 62.2 |

**Source:** Field measurements were performed by AKRF, Inc. on May 11-13, 20, 25, 27 and June 1-2, 8-10, 15-17, 22, 23, 2004.

At all monitoring sites, traffic noise was the dominant noise source. Measured noise levels are relatively moderate and reflect the level of vehicular activity on the adjacent street. In terms of the CEQR criteria, the existing noise levels at receptor Sites 1, 4 through 6, 9, 10, 19, and 26 are in the "acceptable" category, in addition to Sites 13, 16, and 21 during the AM, Sites 2, 21, 22, and 30 during the midday (MD), and Sites 2, 16, 22, 24, and 30 during the PM peak periods. The existing noise levels at Sites 11, 12, 20, 27, and 31, are in the "marginally acceptable" category, in addition to Sites 2, 22, 23, 24 and 30 (AM), Sites 3, 7, 15, 16, 23, 24, 26 and 32 midday (MD), and Sites 3, 7, 15, 21, and 29 (PM) peak periods. The existing noise levels at Sites 8, 14, 17, 18, 25, 28, and Sites 33 through 35 are in the "marginally unacceptable" category, in addition to Sites 3, 7, 15, 26, 29, and 32 during the AM, Sites 13 and 29 midday (MD), and Sites 13, 23, and 32 PM peak periods.

In certain cases, measured $L_{10}$ values are lower than the $L_{eq}$ values (e.g., Site 1 in the AM and PM and Site 19 in the midday). This is unusual as $L_{10}$ values are generally 2-3 (d)BA higher than $L_{eq}$ values. This is believed to have occurred at these sites due to the exceptionally low traffic volumes at these locations such that the predominant noise source is not traffic. Therefore, to ensure that the reasonable worst case noise levels are used in the analysis, both the $L_{eq}$ and $L_{10}$ values are presented in Tables 19-9 and 19-10.

## E. THE FUTURE WITHOUT THE PROPOSED ACTION (NO-ACTION)

Table 19-9 shows the $L_{eq(1)}$ and $L_{10}$ noise levels for future year 2013 conditions without the proposed action at the receptor locations analyzed for project-generated traffic noise for the AM, Midday and PM peak analysis periods. Future No-Action noise levels were calculated in terms of $L_{eq(1)}$ values based on CEQR standards used to evaluate impacts since the $L_{eq(1)}$ provides an indication of the highest expected sound levels. The values were calculated using proportional modeling analysis. Note, future No-Action noise levels shown in Table 19-9 are limited to receptor sites where project-generated traffic would have the potential to cause significant increases in noise levels. At receptor sites not shown below, existing traffic volumes in the future would not double (i.e., produce increases of 3.0 dBA or more above existing ambient), and therefore those receptors were only used to determine building attenuation requirements.

**TABLE 19-9**
**Future No-Action Noise Levels (in dBA)**

| Site | Time | Existing $L_{eq(1)}$ | 2013 No Action $L_{eq(1)}$ | Change | Existing $L_{10}$ | 2013 No Action $L_{10}$ | $L_{10}$ Change |
|---|---|---|---|---|---|---|---|
| 1 | AM | 63.7 | 64.1 | 0.4 | 62.8 | 63.2 | 0.4 |
| | MD | 52.9 | 53.3 | 0.4 | 54.4 | 54.8 | 0.4 |
| | PM | 59.7 | 60.1 | 0.4 | 59.0 | 59.4 | 0.4 |
| 2 | AM | 65.7 | 66.1 | 0.4 | 66.0 | 66.4 | 0.4 |
| | MD | 59.0 | 59.4 | 0.4 | 57.4 | 57.8 | 0.4 |
| | PM | 59.4 | 59.9 | 0.5 | 60.0 | 60.5 | 0.5 |
| 3 | AM | 69.3 | 69.8 | 0.5 | 72.2 | 72.7 | 0.5 |
| | MD | 66.5 | 66.9 | 0.4 | 67.2 | 67.6 | 0.4 |
| | PM | 63.4 | 63.8 | 0.4 | 65.4 | 65.8 | 0.4 |
| 4 | AM | 60.1 | 60.5 | 0.4 | 62.0 | 62.4 | 0.4 |
| | MD | 57.7 | 58.1 | 0.4 | 59.6 | 60.0 | 0.4 |
| | PM | 61.4 | 61.8 | 0.4 | 64.4 | 64.8 | 0.4 |
| 5 | AM | 62.6 | 63.1 | 0.5 | 61.0 | 61.5 | 0.5 |
| | MD | 57.7 | 58.1 | 0.4 | 64.6 | 65.0 | 0.4 |
| | PM | 62.4 | 62.8 | 0.4 | 63.2 | 63.6 | 0.4 |
| 6 | AM | 61.9 | 62.4 | 0.5 | 64.2 | 64.7 | 0.5 |
| | MD | 59.3 | 59.8 | 0.5 | 62.2 | 62.7 | 0.5 |
| | PM | 59.6 | 60.1 | 0.5 | 63.4 | 63.9 | 0.5 |
| 7 | AM | 70.2 | 70.6 | 0.4 | 73.6 | 74.0 | 0.4 |
| | MD | 66.8 | 67.2 | 0.4 | 68.4 | 68.8 | 0.4 |
| | PM | 63.5 | 63.9 | 0.4 | 65.2 | 65.6 | 0.4 |
| 8 | AM | 74.9 | 75.3 | 0.4 | 78.6 | 79.0 | 0.4 |
| | MD | 71.4 | 71.8 | 0.4 | 77.8 | 78.2 | 0.4 |
| | PM | 73.7 | 74.1 | 0.4 | 77.0 | 77.4 | 0.4 |
| 9 | AM | 58.6 | 59.0 | 0.4 | 61.0 | 61.4 | 0.4 |
| | MD | 60.3 | 60.7 | 0.4 | 62.4 | 62.8 | 0.4 |
| | PM | 58.6 | 59.0 | 0.4 | 61.0 | 61.4 | 0.4 |
| 10 | AM | 60.1 | 60.6 | 0.5 | 61.6 | 62.1 | 0.5 |
| | MD | 60.3 | 60.7 | 0.4 | 62.4 | 62.8 | 0.4 |
| | PM | 58.8 | 59.2 | 0.4 | 60.0 | 60.4 | 0.4 |
| 14 | AM | 71.9 | 72.3 | 0.4 | 75.6 | 76.0 | 0.4 |
| | MD | 76.2 | 76.6 | 0.4 | 78.6 | 79.0 | 0.4 |
| | PM | 72.4 | 72.8 | 0.4 | 75.8 | 76.2 | 0.4 |
| 26 | AM | 67.9 | 68.3 | 0.4 | 70.6 | 71.0 | 0.4 |
| | MD | 64.9 | 65.3 | 0.4 | 68.0 | 68.4 | 0.4 |
| | PM | 64.0 | 64.4 | 0.4 | 55.5 | 55.9 | 0.4 |

**TABLE 19-9 (continued)**
**Future No-Action Noise Levels (in dBA)**

| Site | Time | Existing $L_{eq(1)}$ | 2013 No Action $L_{eq(1)}$ | Change | Existing $L_{10}$ | 2013 No Action $L_{10}$ | $L_{10}$ Change |
|---|---|---|---|---|---|---|---|
| 27 | AM | 67.0 | 67.4 | 0.4 | 69.8 | 70.2 | 0.4 |
| | MD | 67.2 | 67.6 | 0.4 | 70.0 | 70.4 | 0.4 |
| | PM | 67.2 | 67.6 | 0.4 | 70.4 | 70.8 | 0.4 |
| 29 | AM | 68.0 | 68.4 | 0.4 | 71.2 | 71.6 | 0.4 |
| | MD | 68.6 | 69.0 | 0.4 | 71.5 | 71.9 | 0.4 |
| | PM | 63.8 | 64.2 | 0.4 | 67.0 | 67.4 | 0.4 |
| 30 | AM | 65.4 | 65.8 | 0.4 | 65.8 | 66.2 | 0.4 |
| | MD | 60.6 | 61.0 | 0.4 | 63.5 | 63.9 | 0.4 |
| | PM | 60.8 | 61.2 | 0.4 | 63.0 | 63.4 | 0.4 |
| 31 | AM | 63.0 | 63.4 | 0.4 | 65.6 | 66.0 | 0.4 |
| | MD | 65.8 | 66.2 | 0.4 | 67.4 | 67.8 | 0.4 |
| | PM | 63.0 | 63.4 | 0.4 | 66.2 | 66.6 | 0.4 |

**Source:** AKRF, Inc., August 2004.

Future No-Action noise levels are not expected to be significantly higher than existing levels since a substantial amount of new development is not expected for the No-Action condition. Traffic is the dominant noise source, and traffic would not increase significantly when compared with existing volumes. At each of the receptor sites, noise levels in the year 2013 would increase by less than 1.0 dBA.

As per CEQR standards (see Table 19-5), the future No-Action noise levels at Sites 1, 4 through 6, 9, 10 and 30 would remain in the "acceptable" category, in addition to Site 2 and 26 midday (MD) and Site 2 PM peak periods. The future No-Action noise levels at Site 31 would remain in the "marginally acceptable" category, in addition to Sites 2 (AM), Sites 7 and 26, Site 3 midday (MD), and Sites 3, 7 and 29 PM peak periods. The future No-Action noise levels at Sites 8 and 27 would also remain in the "marginally unacceptable" category, in addition to Sites 3, 7, 26 and 29 (AM), and Sites 29 midday (MD).

## F. THE FUTURE WITH THE PROPOSED ACTION (SCENARIO A)

### Traffic Increment Analysis

Table 19-10 presents future noise levels for the proposed action at receptor locations analyzed for project-generated traffic noise for year 2013. Noise levels were calculated using proportional modeling analysis.

As per CEQR Guidelines, a change of 3.0 dBA or more as a result of a proposed action is a significant noise impact. As shown in Table 19-10, future With-Action noise levels increases in dBA $L_{eq(1)}$ at all monitoring sites would be less than 2.0 dBA than future No-Action noise levels. Changes of this magnitude are below the *CEQR Technical Manual* threshold for impact significance and would also be imperceptible. Therefore, the traffic generated by the proposed action would not produce any significant adverse noise impacts. As described in the *CEQR Technical Manual*, DEP has established noise attenuation values required to maintain acceptable interior noise levels (i.e., interior noise levels in buildings at 45 dBA or lower, based on exterior $L_{10(1)}$ noise levels with the proposed action (see Table 19-6). A discussion of noise attenuation requirements is provided beginning on page 19-15.

**TABLE 19-10**
**Future with Action Noise Levels (in dBA)**

| Monitor Site | Time | 2013 No-Action $L_{eq(1)}$ | 2013 with-Action $L_{eq(1)}$ | $L_{eq(1)}$ Change | 2013 No-Action $L_{10}$ | 2013 with-Action $L_{10(1)}$ | $L_{10}$ Change |
|---|---|---|---|---|---|---|---|
| 1 | AM | 64.1 | 64.3 | 0.2 | 63.2 | 63.4 | 0.2 |
| | MD | 53.3 | 53.4 | 0.1 | 54.8 | 54.9 | 0.1 |
| | PM | 60.1 | 60.2 | 0.1 | 59.4 | 59.5 | 0.1 |
| 2 | AM | 66.1 | 67.0 | 0.9 | 66.4 | 67.3 | 0.9 |
| | MD | 59.4 | 59.9 | 0.5 | 57.8 | 58.3 | 0.5 |
| | PM | 59.9 | 61.3 | 1.4 | 60.5 | 61.9 | 1.4 |
| 3 | AM | 69.8 | 70.5 | 0.7 | 72.7 | 73.4 | 0.7 |
| | MD | 66.9 | 67.7 | 0.8 | 67.6 | 68.4 | 0.8 |
| | PM | 63.8 | 64.3 | 0.5 | 65.8 | 66.3 | 0.5 |
| 4 | AM | 60.5 | 60.7 | 0.2 | 62.4 | 62.6 | 0.2 |
| | MD | 58.1 | 58.3 | 0.2 | 60.0 | 60.2 | 0.2 |
| | PM | 61.8 | 62.3 | 0.5 | 64.8 | 65.3 | 0.5 |
| 5 | AM | 63.1 | 64.5 | 1.4 | 61.5 | 62.9 | 1.4 |
| | MD | 58.1 | 58.5 | 0.4 | 65.0 | 65.4 | 0.4 |
| | PM | 62.8 | 64.0 | 1.2 | 63.6 | 64.8 | 1.2 |
| 6 | AM | 62.4 | 62.5 | 0.1 | 64.7 | 64.8 | 0.1 |
| | MD | 59.8 | 60.2 | 0.4 | 62.7 | 63.1 | 0.4 |
| | PM | 60.1 | 60.8 | 0.7 | 63.9 | 64.6 | 0.7 |
| 7 | AM | 70.6 | 71.0 | 0.4 | 74.0 | 74.4 | 0.4 |
| | MD | 67.2 | 67.5 | 0.3 | 68.8 | 69.1 | 0.3 |
| | PM | 63.9 | 64.2 | 0.3 | 65.6 | 65.9 | 0.3 |
| 8 | AM | 75.3 | 75.4 | 0.1 | 79.0 | 79.1 | 0.1 |
| | MD | 71.8 | 71.9 | 0.1 | 78.2 | 78.3 | 0.1 |
| | PM | 74.1 | 74.3 | 0.2 | 77.4 | 77.6 | 0.2 |
| 9 | AM | 59.0 | 59.5 | 0.5 | 61.4 | 61.9 | 0.5 |
| | MD | 60.7 | 61.2 | 0.5 | 62.8 | 63.3 | 0.5 |
| | PM | 59.0 | 59.5 | 0.5 | 61.4 | 61.9 | 0.5 |
| 10 | AM | 60.6 | 60.6 | 0.0 | 62.1 | 62.1 | 0.0 |
| | MD | 60.7 | 60.8 | 0.1 | 62.8 | 62.9 | 0.1 |
| | PM | 59.2 | 59.6 | 0.3 | 60.4 | 60.7 | 0.3 |
| 14 | AM | 72.3 | 72.4 | 0.0 | 76.0 | 76.1 | 0.0 |
| | MD | 76.6 | 76.7 | 0.0 | 79.0 | 79.1 | 0.0 |
| | PM | 72.8 | 72.9 | 0.1 | 76.2 | 76.3 | 0.1 |
| 26 | AM | 68.3 | 68.3 | 0.0 | 71.0 | 71.0 | 0.0 |
| | MD | 65.3 | 65.3 | 0.0 | 68.4 | 68.4 | 0.0 |
| | PM | 64.4 | 64.4 | 0.0 | 55.9 | 55.9 | 0.0 |
| 27 | AM | 67.4 | 67.6 | 0.2 | 70.2 | 70.4 | 0.2 |
| | MD | 67.6 | 67.7 | 0.1 | 70.4 | 70.5 | 0.1 |
| | PM | 67.6 | 67.7 | 0.1 | 70.8 | 70.9 | 0.1 |
| 29 | AM | 68.4 | 68.4 | 0.0 | 71.6 | 71.6 | 0.0 |
| | MD | 69.0 | 69.0 | 0.0 | 71.9 | 71.9 | 0.0 |
| | PM | 64.2 | 64.2 | 0.0 | 67.4 | 67.4 | 0.0 |
| 30 | AM | 65.8 | 65.8 | 0.0 | 66.2 | 66.2 | 0.0 |
| | MD | 61.0 | 61.0 | 0.0 | 63.9 | 63.9 | 0.0 |
| | PM | 61.2 | 61.3 | 0.1 | 63.4 | 63.5 | 0.1 |
| 31 | AM | 63.4 | 63.4 | 0.0 | 66.0 | 66.0 | 0.0 |
| | MD | 66.2 | 66.2 | 0.0 | 67.8 | 67.8 | 0.0 |
| | PM | 63.4 | 63.4 | 0.0 | 66.6 | 66.6 | 0.0 |

**Source:** AKRF, Inc., June 2004.

## Assessment of Parkland

In addition, as part of the proposed action, a public park is proposed to be built at the Bayside Fuel Oil site along Kent Avenue between North 9th Street and North 15th Street and south of Bushwick Inlet. Based upon the monitoring results for receptor Sites 8 and 14, $L_{10}$ noise levels of approximately 79.1 dBA would be expected in this park with the proposed action and 79.0 dBA without the proposed action. These noise levels are higher than those generally recommended for parks and places of outdoor activities (i.e., they would exceed the CEQR Exposures Guideline value of 55 dBA $L_{10}$ shown in Table 19-5 for this use). However, these ambient noise levels are comparable to noise levels at many existing City parks that are adjacent to roads, and would not be considered a significant adverse impact. In addition, the proposed action is not creating any significant noise impacts due to project-generated traffic (i.e., less than 3.0 dBA). The higher readings are due to existing background noise at the proposed site.

There are no feasible mitigation measures to reduce noise levels within an urban park such as this to recommended park levels. However, it would also be expected that these noise levels would diminish at locations in the park that are further from the streets (i.e., nearer the water).

## Attenuation Requirements for Residential/Commercial Buildings

As shown in Table 19-6, the *CEQR Technical Manual* has set noise attenuation standards for buildings, based on exterior noise levels. Recommended noise attenuation values for buildings are designed to maintain interior noise levels of 45 dBA or lower, and are determined based on exterior $L_{10(1)}$ noise levels.

Based upon the measured ambient $L_{10}$ noise levels in the area of the proposed rezoning (see Table 19-11), noise attenuation would be required at certain sites due to the high existing and projected noise levels in order to achieve interior residential noise levels of 45 dBA or lower in residential/commercial zoning districts. This zoning attenuation would be required for both projected and potential development sites in one of two ways: 1) through the zoning resolution, which requires noise attenuation in mixed use districts; and 2) through the use of an (E) designation.

Under the New York City Zoning Resolution, Section 123-32, new residential developments and conversions in mixed use zoning districts require a minimum of 35 dBA window/wall attenuation to maintain interior noise levels of 45 dBA or lower and shall be provided with alternate means of ventilation and window/wall attenuation. As shown in Table 19-11, a minimum of 35 dBA, as required by the zoning resolution, would achieve the required interior noise level of 45 dBA for all the projected and potential development sites located within these districts (i.e., there is no required noise attenuation at levels greater than 35 dBA).

Noise attenuation requirements were evaluated for all of the projected and potential development sites. Three factors were considered in this analysis: 1) whether a development site would require attenuation of 30 dBA or greater; 2) whether the site is currently in a zoning district that does notallow residential uses (e.g., an M or C8 zone); and 3) whether the site is currently in a zoning district that would allow residential in the No–Action (e.g., R6N). If a site met the first two criteria, it was determined to need an (E) designation. If the site met the last criteria, and it could be developed with a residential use in the No-Action, it would not receive an (E) designation.

## TABLE 19-11
## Minimum Building Attenuation to Comply With CEQR Requirements at Each Receptor Site

| Monitor Site | Location | Time | $L_{10(1)}$ (dBA) | Minimum Required Building Attenuation (dBA) | Receptor Location by Proposed Zoning District |
|---|---|---|---|---|---|
| 1 | Clay Street btw Franklin Street & Manhattan Avenue | AM | 64.3* | 20 | MX, M1-2/R6A |
| 2 | Eagle Street btw West Street & Franklin Street | AM | 67.3 | 25 | R6A |
| 3 | Freeman Street btw West Street & Franklin Street | AM | 73.4 | 30 | R6A |
| 4 | West Street btw Freeman Street & Green Street | PM | 65.3 | 20 | R6 |
| 5 | Green Street btw West & Franklin Street | MD | 65.4 | 25 | R6B |
| 6 | Huron Street btw West Street & Franklin Street | AM | 64.8 | 20 | R6B |
| 7 | Greenpoint Avenue btw West Street & Franklin Street | AM | 74.4 | 30 | MX, M1-2/R6A |
| 8 | Kent Avenue btw North 11th Street & North 12th Street | AM | 79.1 | 35 | M3-1 |
| 9 | North 7th Street btw Kent Avenue & Wythe Avenue | MD | 63.3 | 20 | MX, M1-2/R6A |
| 10 | North 6th Street btw Kent Avenue & Wythe Avenue | MD | 62.9 | 20 | MX, M1-2/R6A |
| 11 | McGuinness Blvd. btw Box Street & Clay Street | PM | 69.8 | 25 | R6 |
| 12 | Green Street btw Franklin Street & Manhattan Avenue | AM | 70.3 | 30 | MX, M1-2/R6A |
| 13 | West Street btw Noble Street & Milton Street | PM | 72.4 | 30 | MX, M1-2/R6A |
| 14 | Kent Avenue btw North 8th Street & North 9th Street | MD | 79.1 | 35 | M3-1 |
| 15 | Berry Street btw North 5th Street & North 6th Street | AM | 72.1 | 30 | MX, M1-2/R6A |
| 16 | North 1st Street btw Kent Avenue & Wythe Avenue | MD | 66.5 | 25 | MX, M1-2/R6A |
| 17 | South 5th Street btw Kent Avenue & Wythe Avenue | AM | 76.2 | 35 | MX, M1-2/R6 |
| 18 | Metropolitan Avenue btw Roebling Street & Havemeyer Street | AM | 76.8 | 35 | MX, M1-2/R6 |
| 19 | Hope Street btw Keap Street & Hooper Street | MD | 63.2 | 20 | MX, M1-2/R6 |
| 20 | Roebling Street btw North 7th Street & North 8the Street | MD | 68.4 | 25 | MX, M1-2/R6A |
| 21 | North 9th Street btw Driggs Avenue & Roebling Street | PM | 66.0 | 25 | MX, M1-2/R6A |
| 22 | North 11th Street btw Bedford Avenue & Driggs Avenue | PM | 63.4 | 20 | MX, M1-2/R7A |
| 23 | Union Avenue btw BQE Expressway & Withers Street | PM | 70.6 | 30 | MX, M1-2/R6 |
| 24 | Richardson Street btw Union Avenue & Lorimer Street | AM | 67.9 | 25 | MX, M1-2/R6B |
| 25 | McGuinness Blvd btw Bayard Street & Meeker Street | AM | 77.2 | 35 | MX, M1-2/R6 |
| 26 | Manhattan Avenue btw Box Street & Clay Street | AM | 71.0 | 30 | MX, M1-2/R6A |

**TABLE 19-11 (continued)**
**Minimum Building Attenuation to Comply With CEQR Requirements at Each Receptor Site**

| Monitor Site | Location | Time | $L_{10(1)}$ (dBA) | Minimum Required Building Attenuation (dBA) | Receptor Location by Proposed Zoning District |
|---|---|---|---|---|---|
| 27 | Franklin Street btw Kent Street & Greenpoint Avenue | PM | 70.9 | 30 | MX, M1-2/R6A |
| 28 | South 5th Street btw Bedford Avenue & Driggs Avenue | PM | 76.9 | 35 | MX, M1-2/R6 |
| 29 | Berry Street btw Grand Street & North 1st Street | MD | 71.9 | 30 | R6A |
| 30 | North 12th Street btw Bedford Avenue & Driggs Avenue | AM | 66.2 | 25 | MX, M1-2/R7A |
| 31 | Manhattan Avenue btw Eckford Street & Engert Avenue | MD | 67.8 | 25 | MX, M1-2/R6 |
| 32 | Driggs Avenue btw Eckford Street & Graham Avenue | AM | 72.0 | 30 | R6B |
| 33 | Marcy Avenue btw Grand Street & Hope Street | AM | 75.2 | 35 | R6 |
| 34 | Intersection of Withers Street & BQE | AM | 75.4 | 35 | MX, M1-2/R6 |
| 35 | Leonard Street btw Richardson Street & BQE | PM | 72.4 | 30 | MX, M1-2/R6 |

**Note:** * $L_{eq}$ value ($L_{eq}$ higher than $L_{10}$).
**Source:** AKRF, Inc., June 2004.

To achieve 30/35 dBA of building attenuation, double glazed windows with good sealing properties would be used as well as alternate means of ventilation such as well sealed through-the-wall air conditioning or central air conditioning. In addition, mechanical equipment such as heating, ventilation, and air conditioning (HVAC) and elevator motors would utilize sufficient noise reduction devices to comply with applicable noise regulations and standards.

There are two levels of required noise attenuation depending upon the ambient noise levels. One level of attenuation is 30 dBA and the higher level of attenuation is 35 dBA. The text for the (E) Designation for sites requiring 30 dBA of attenuation would be as follows:

> **"In order to ensure an acceptable interior noise environment, future residential/ commercial uses must provide a closed window condition with a minimum of 30 dBA window/wall attenuation on all façades in order to maintain an interior noise level of 45 dBA. In order to maintain a closed-window condition, an alternate means of ventilation must also be provided. Alternate means of ventilation includes, but is not limited to central air conditioning or air conditioning sleeves containing air conditioners or HUD approved fans."**

The projected and potential development sites where the 30 dBA level of noise attenuation would be required are presented in Table 19-12. As shown in the table, there are 38 sites where this would apply, 10 of which are projected development sites and 28 of which are potential development sites.

**TABLE 19-12**
**Development Sites for (E) Designation: 30 dBA Attenuation**

| Site Number | Block | Tax Lot | Development Type | Proposed Zoning | Minimum Required Building Attenuation |
|---|---|---|---|---|---|
| **Projected Sites** | | | | | |
| 3 | 2494 | 1 | New Construction | R6/R8 | 30 |
| | 2502 | 1 | New Construction | R6/R8 | 30 |
| | 2472 | 2 | New Construction | R6/R8 | 30 |
| | 2520 | 57 | New Construction | R6/R8 | 30 |
| | 2510 | 1 | New Construction | R6/R8 | 30 |
| 10 | 2483 | 11 | New Construction | M1-1/R6A | 30 |
| | 2483 | 12 | New Construction | M1-1/R6A | 30 |
| 15 | 2483 | 25 | New Construction | M1-1/R6 | 30 |
| 19 | 2511 | 1 | New Construction | M1-1/R6A | 30 |
| 22 | 2512 | 60 | Conversion | M1-1/R6A | 30 |
| 26 | 2521 | 6 | New Construction | M1-1/R6A | 30 |
| | 2521 | 5 | New Construction | M1-1/R6A | 30 |
| | 2521 | 7 | New Construction | M1-1/R6A | 30 |
| 43 | 2539 | 29 | New Construction | R6B | 30 |
| | 2539 | 27 | New Construction | R6B | 30 |
| 56 | 2567 | 1 | New Construction | R6/R8 | 30 |
| | 2570 | 36 | New Construction | R6/R8 | 30 |
| | 2556 | 1 | New Construction | R6/R8 | 30 |
| | 2564 | 1 | New Construction | R6/R8 | 30 |
| 302.1 | 2381 | 1 | New Construction | R6/C2-4 | 30 |
| 314 | 2393 | 14 | New Construction | R6 | 30 |
| **Potential Sites** | | | | | |
| 1 | 2472 | 410 | New Construction | R6 | 30 |
| 2 | 2472 | 425 | New Construction | R6 | 30 |
| 3.1 | 2472 | 32 | New Construction | R6/R8 | 30 |
| | 2494 | 6 | New Construction | R6/R8 | 30 |
| 3.2 | 2472 | 100 | New Construction | R6/R8 | 30 |
| 20 | 2511 | 14 | New Construction | R6B | 30 |
| | 2511 | 11 | New Construction | R6B | 30 |
| 21 | 2511 | 31 | New Construction | R6B | 30 |
| 24 | 2520 | 1 | New Construction | R6 | 30 |
| 27 | 2521 | 11 | New Construction | M1-1/R6A | 30 |
| | 2521 | 12 | New Construction | R6B | 30 |
| | 2521 | 13 | New Construction | R6B | 30 |
| 34 | 2530 | 55 | New Construction | R6/R8 | 30 |
| | 2530 | 56 | New Construction | R6/R8 | 30 |
| | 2530 | 1 | New Construction | R6/R8 | 30 |
| 36 | 2531 | 110 | New Construction | R6B | 30 |
| | 2531 | 10 | New Construction | M1-1/R6A | 30 |
| | 2531 | 9 | New Construction | M1-1/R6A | 30 |
| 37 | 2531 | 12 | New Construction | R6B | 30 |
| 38 | 2531 | 36 | New Construction | R6B | 30 |
| | 2531 | 35 | New Construction | R6B | 30 |
| 40 | 2532 | 1 | New Construction | R6 | 30 |
| 41 | 2538 | 1 | New Construction | R6/R8 | 30 |
| 42 | 2539 | 1 | New Construction | M1-1/R6A | 30 |
| | 2539 | 8 | New Construction | R6B | 30 |
| 44 | 2543 | 1 | New Construction | R6/R8 | 30 |
| 51 | 2556 | 46 | New Construction | R6 | 30 |
| | 2556 | 45 | New Construction | R6 | 30 |

**TABLE 19-12 (continued)**
**Development Sites for (E) Designation: 30 dBA Attenuation**

| Site Number | Block | Tax Lot | Development Type | Proposed Zoning | Minimum Required Building Attenuation |
|---|---|---|---|---|---|
| 52 | 2556 | 57 | New Construction | R6 | 30 |
| | 2556 | 58 | New Construction | R6 | 30 |
| | 2556 | 55 | New Construction | R6 | 30 |
| 62 | 2570 | 1 | New Construction | R6/R8 | 30 |
| 67 | 2590 | 1 | New Construction | R6 | 30 |
| | 2590 | 210 | New Construction | R6 | 30 |
| | 2590 | 222 | New Construction | R6 | 30 |
| | 2590 | 215 | New Construction | R6 | 30 |
| 68 | 2590 | 210 | New Construction | R6 | 30 |
| | 2590 | 222 | New Construction | R6 | 30 |
| | 2590 | 215 | New Construction | R6 | 30 |
| 142 | 2304 | 14 | New Construction | R6A | 30 |
| | 2304 | 10 | New Construction | R6A | 30 |
| | 2304 | 13 | New Construction | R6A | 30 |
| | 2304 | 12 | New Construction | R6A | 30 |
| 298 | 2379 | 42 | New Construction | R6A | 30 |
| | 2379 | 44 | New Construction | R6A | 30 |
| | 2379 | 43 | New Construction | R6A | 30 |
| 302 | 2379 | 27 | New Construction | R6A | 30 |
| | 2379 | 24 | New Construction | M1-2/R6A | 30 |
| 303 | 2381 | 14 | New Construction | R6 | 30 |
| | 2381 | 16 | New Construction | R6 | 30 |
| | 2381 | 15 | New Construction | R6 | 30 |
| 306 | 2384 | 25 | New Construction | R6 | 30 |
| | 2384 | 23 | New Construction | R6 | 30 |
| | 2384 | 22 | New Construction | R6 | 30 |
| | 2384 | 24 | New Construction | R6 | 30 |
| 315 | 2393 | 23 | New Construction | R6 | 30 |
| | 2393 | 24 | New Construction | R6 | 30 |
| 316 | 2404 | 5 | New Construction | R6 | 30 |
| | 2404 | 1 | New Construction | R6 | 30 |

For sites requiring 35 dBA of noise attenuation, the following (E) designation noise text would apply (as shown in Table 19-13, there are 7 sites requiring 35 dBA of noise attenuation, 1 of which is a projected development site and 6 of which are potential development sites.):

> "**In order to ensure an acceptable interior noise environment, future residential/ commercial uses must provide a closed window condition with a minimum of 35 dBA window/wall attenuation on all facades in order to maintain an interior noise level of 45 dBA. In order to maintain a closed-window condition, an alternate means of ventilation must also be provided. Alternate means of ventilation includes, but is not limited to central air conditioning or air conditioning sleeves containing air conditioners or HUD approved fans.**"

In sum, with the attenuation measures specified above, the proposed rezoning would not result in any significant adverse noise impacts, and would meet CEQR guidelines.

**TABLE 19-13**
**Projected and Potential Development Sites for (E) Designation: 35 dBA Attenuation**

| Site Number | Block | Tax Lot | Development Type | Proposed Zoning | Minimum Required Building Attenuation |
|---|---|---|---|---|---|
| **Projected Sites** | | | | | |
| 199 | 2324 | 1 | New Construction | R6/R8 | 35 |
| | 2332 | 1 | New Construction | R6/R8 | 35 |
| **Potential Sites** | | | | | |
| 222 | 2340 | 1 | New Construction | R6/R8 | 35 |
| 233 | 2346 | 30 | New Construction | R6 | 35 |
| 234 | 2346 | 26 | New Construction | R6 | 35 |
| 304 | 2382 | 28 | Reactivation | R6 | 35 |
| 317 | 2416 | 8 | New Construction | R6 | 35 |
| 318 | 2416 | 27 | New Construction | R6 | 35 |

## F. THE FUTURE WITH THE PROPOSED ACTION (SCENARIO B)

### Assessment of Impacts with the Proposed TransGas Energy Project (Scenario B)

Under Scenario B of the proposed action, the TransGas power plant is assumed to be developed. Under this scenario, the proposed plant site (the Bayside Fuel Oil site) would be excluded from the proposed park, resulting in a smaller park. The TransGas plant would then be built between North 12th Street and North 15th Street, south of Bushwick Inlet. The resultant noise levels of this scenario were evaluated, based on an environmental noise assessment conducted for the proposed TransGas power plant, TransGas Energy Facility, Brooklyn NY Application for a Certificate of Environmental Compatibility and Public Need pursuant to Article X of the New York State Public Service Law December 2002.

The noise study for the TransGas plant projected overall noise levels produced by the various plant components, including the turbine units, air inlets, gas compressors, Heat Recovery Steam Generators (HRSGs), exhaust fans, air-cooled condensers, transformers, assuming a number of significant noise attenuation features. Among them are air inlet silencers, lower noise transformers, acoustically treated louvers, and noise barriers for the transformers. In addition, directivity effects for noise from exhaust stacks as well as attenuation factors under varying atmospheric conditions are proposed. Using computer modeling techniques, the overall noise levels at the receptors were projected in the TransGas environmental analysis in terms of an $L_{eq(1)}$ noise level. With these noise attenuation features, the TransGas Analysis of the proposed plant did not disclose any adverse impacts on ambient noise. For example, predicted $L_{dn}$ levels were not expected to change at modeled receptors at Kent Avenue at both North 9th Street and North 13th Street.

That study concluded that noise due to the operation of the plant alone would produce an $L_{eq(1)}$ of 35 dBA at the nearest sensitive receptor, which would be the site of the proposed park at the Kent Avenue and North 9th Street location. The study also concluded that the total increase in noise levels (i.e., traffic plus operational noise at TransGas) at the proposed park would be less than 0.1 dBA, which is less than barely perceptible and is not a significant change in noise levels. Similarly, noise due to operation of the plant would generate noise levels of 45 dBA at the northeastern property line of the proposed park, at locations nearest the proposed TransGas site (Kent Avenue at North 13th Street), and the total increase in noise level (i.e., traffic plus operational noise of TransGas) would be less than the 3 dBA CEQR threshold.

Based on the above, it can be concluded that under this scenario, operation of the TransGas power plant would not result in any significant noise impacts, beyond those that occur under Scenario A (see the discussion above under “Park Assessment”). As stated above, noise levels at the park site are already above the park standard (79.1 dBA), and would not be considered a significant adverse impact.